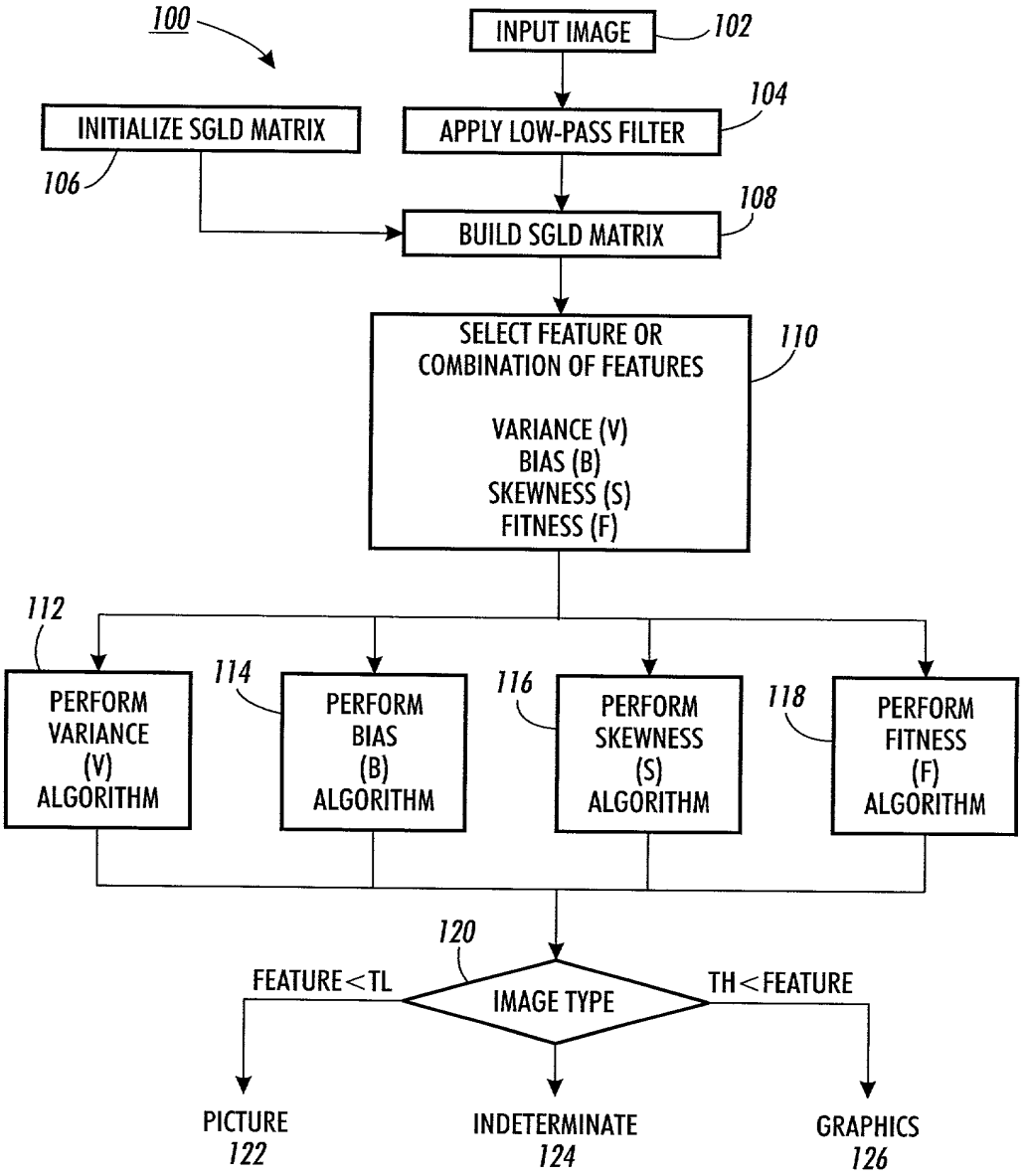

100
INPUT IMAGE
102
INITIALIZE SGLD MATRIX
104
APPLY LOW-PASS FILTER
106
108
BUILD SGLD MATRIX
SELECT FEATURE OR COMBINATION OF FEATURES
110
VARIANCE (V)
BIAS (B)
SKEWNESS (S)
FITNESS (F)
112
PERFORM VARIANCE (V) ALGORITHM
114
PERFORM BIAS (B) ALGORITHM
116
PERFORM SKEWNESS (S) ALGORITHM
118
PERFORM FITNESS (F) ALGORITHM
120
FEATURE<TL
IMAGE TYPE
TH<FEATURE
PICTURE
122
INDETERMINATE
124
GRAPHICS
126

FIG. 1

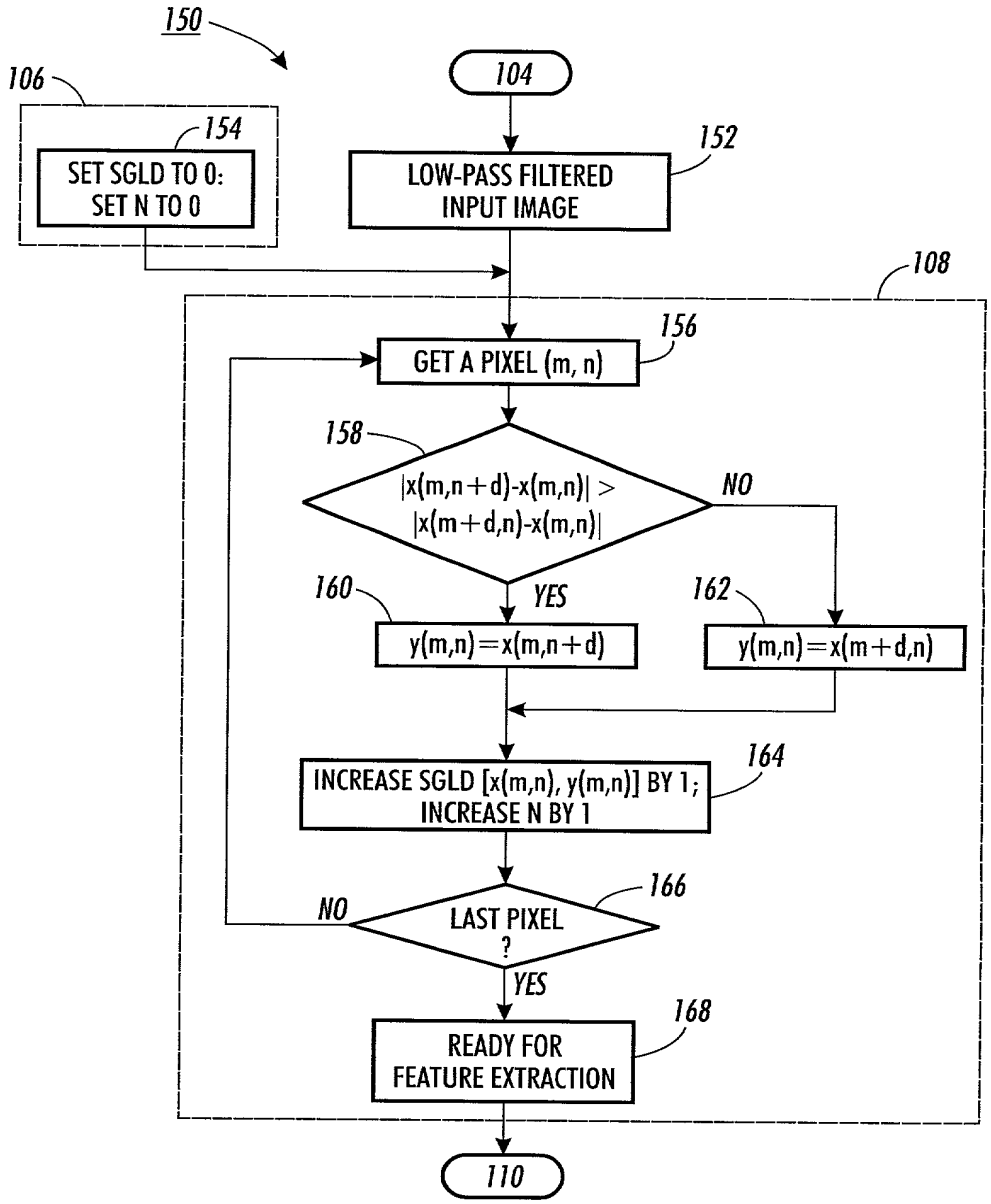

150
106
104
154
SET SGLD TO 0:
SET N TO 0
152
LOW-PASS FILTERED
INPUT IMAGE
108
156
GET A PIXEL (m, n)
158
|x(m,n+d)-x(m,n)| >
|x(m+d,n)-x(m,n)|
NO
YES
160
y(m,n)=x(m,n+d)
162
y(m,n)=x(m+d,n)
164
INCREASE SGLD [x(m,n), y(m,n)] BY 1;
INCREASE N BY 1
166
NO
LAST PIXEL
?
YES
168
READY FOR
FEATURE EXTRACTION
110

FIG. 2

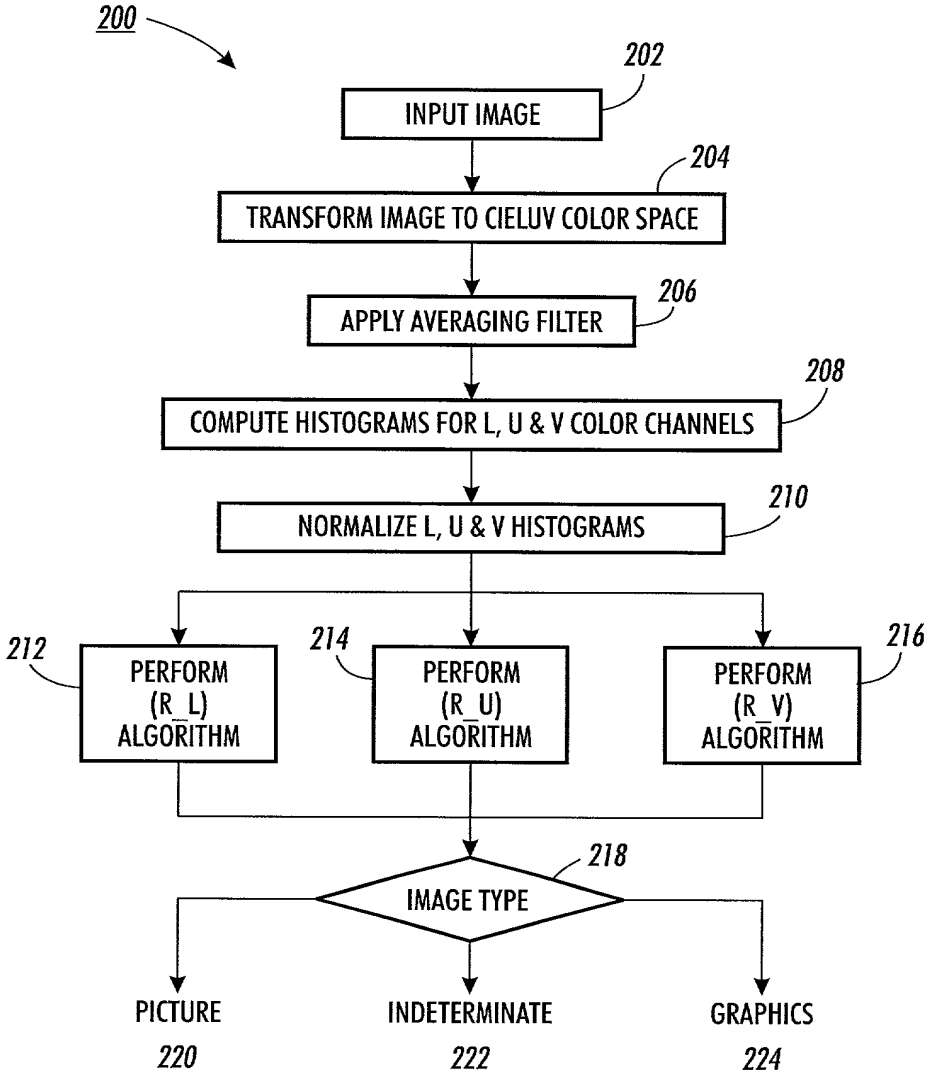

200
202
INPUT IMAGE
204
TRANSFORM IMAGE TO CIELUV COLOR SPACE
206
APPLY AVERAGING FILTER
208
COMPUTE HISTOGRAMS FOR L, U & V COLOR CHANNELS
210
NORMALIZE L, U & V HISTOGRAMS
212
PERFORM (R_L) ALGORITHM
214
PERFORM (R_U) ALGORITHM
216
PERFORM (R_V) ALGORITHM
218
IMAGE TYPE
PICTURE
220
INDETERMINATE
222
GRAPHICS
224

FIG. 3

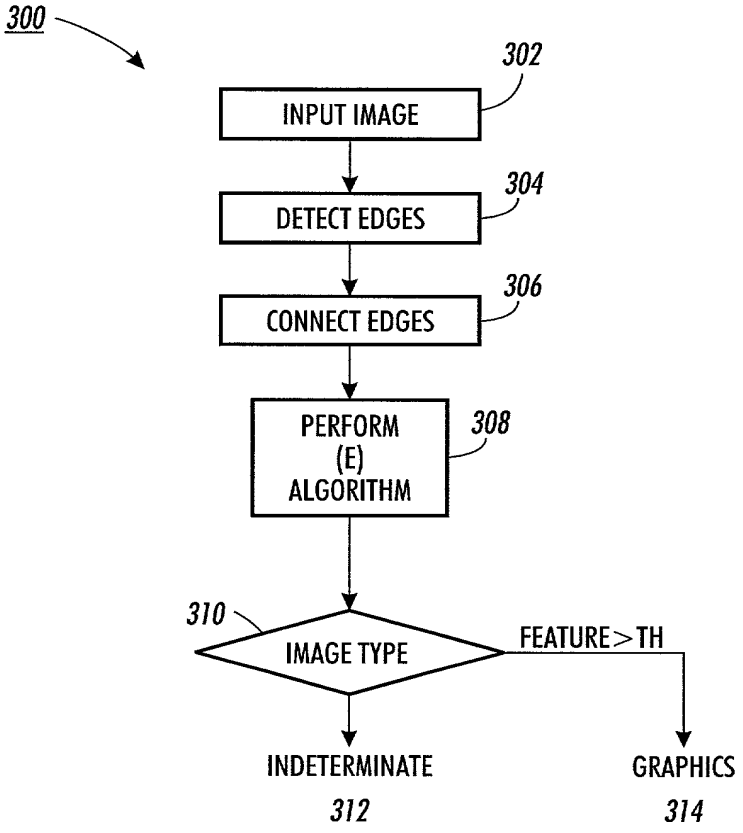


FIG. 4

Patent Application Publication

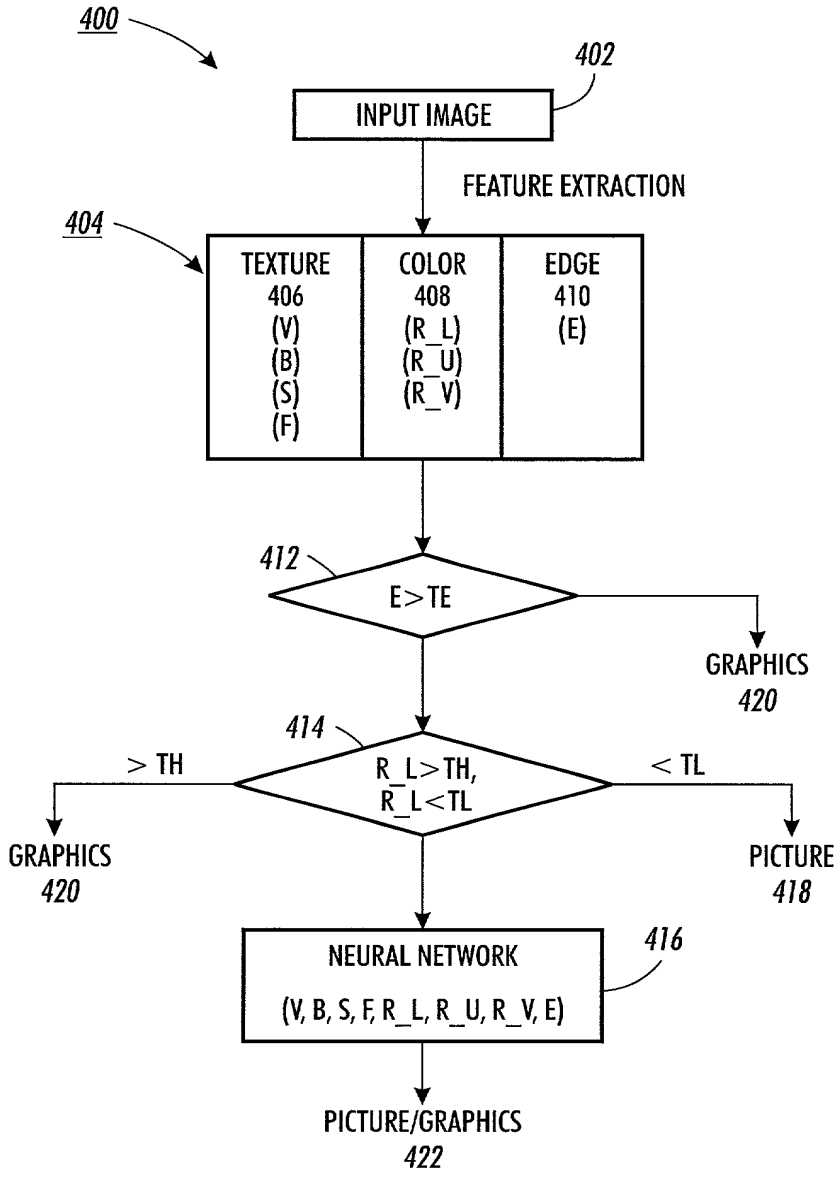
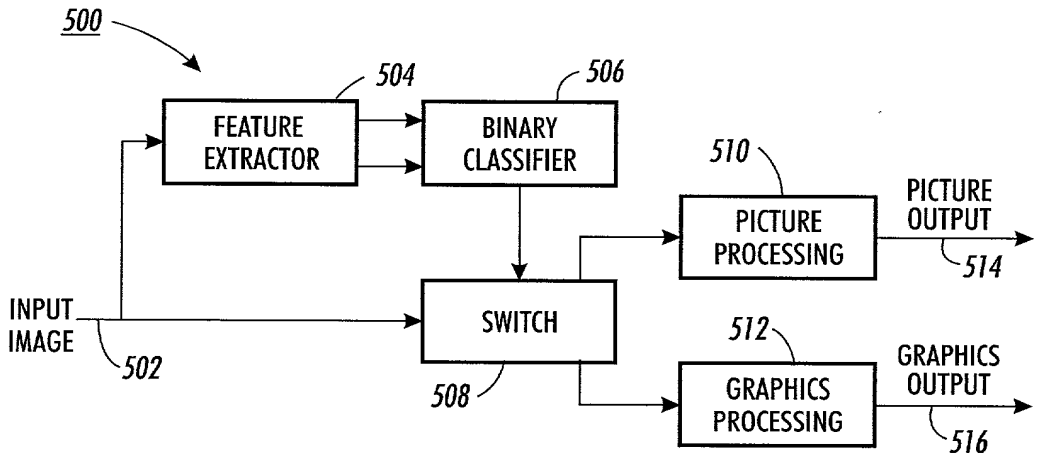

400
402
INPUT IMAGE
FEATURE EXTRACTION
404
TEXTURE
406
(V)
(B)
(S)
(F)
COLOR
408
(R_L)
(R_U)
(R_V)
EDGE
410
(E)
412
E>TE
GRAPHICS
420
414
> TH
R_L>TH,
R_L<TL
< TL
GRAPHICS
420
PICTURE
418
NEURAL NETWORK
(V, B, S, F, R_L, R_U, R_V, E)
416
PICTURE/GRAPHICS
422

FIG. 5

FIG. 6


500
504
506
FEATURE EXTRACTOR
BINARY CLASSIFIER
510
PICTURE PROCESSING
PICTURE OUTPUT
514
INPUT IMAGE
502
SWITCH
508
512
GRAPHICS PROCESSING
GRAPHICS OUTPUT
516

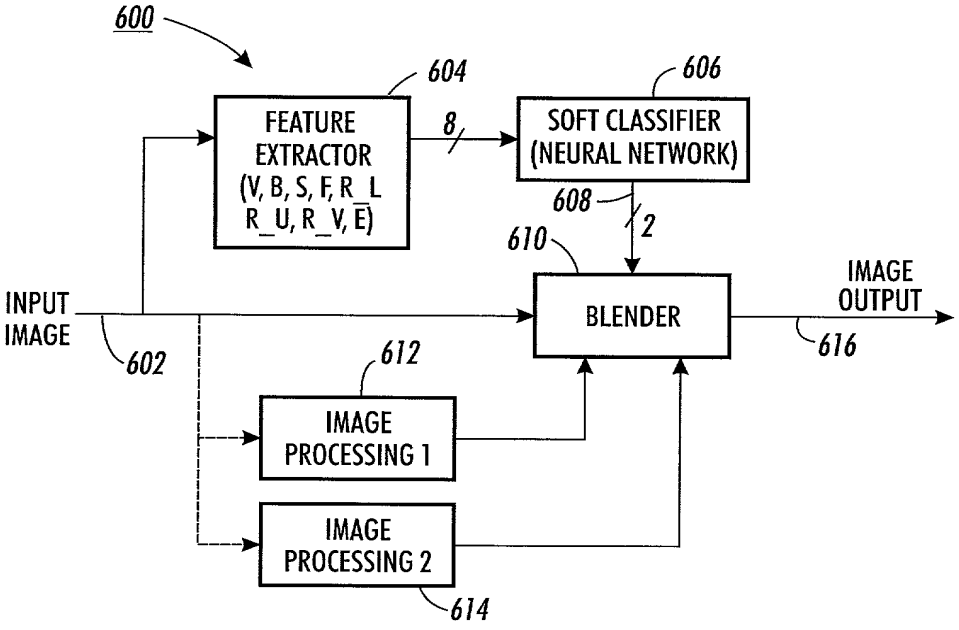

600
604
606
FEATURE EXTRACTOR (V, B, S, F, R_L R_U, R_V, E)
8
SOFT CLASSIFIER (NEURAL NETWORK)
608
2
610
INPUT IMAGE
602
BLENDER
IMAGE OUTPUT
616
612
IMAGE PROCESSING 1
IMAGE PROCESSING 2
614

FIG. 7